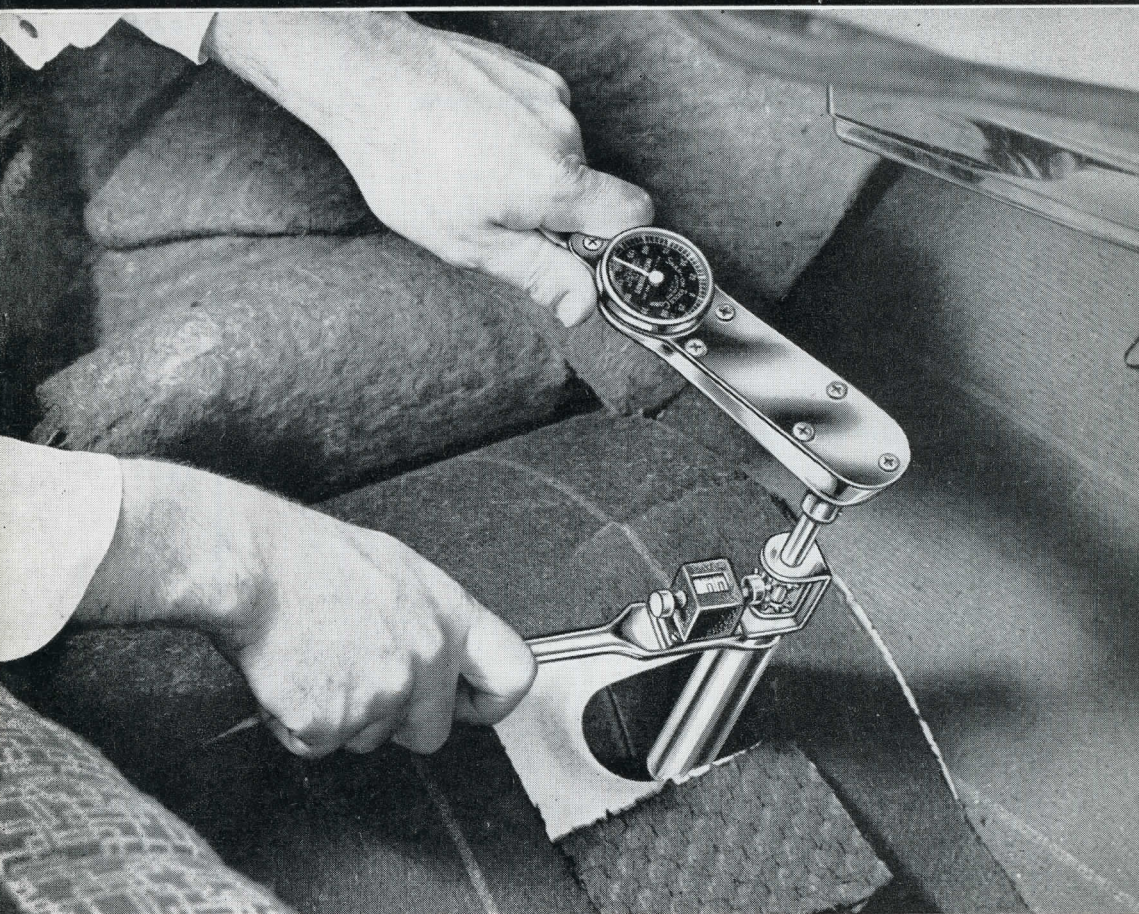


Instructions for Automatic Transmission Tools



INSTRUCTIONS FOR *Snap-on*^{*} AUTOMATIC TRANSMISSION TOOLS

*Trademark of Snap-on Tools Corporation

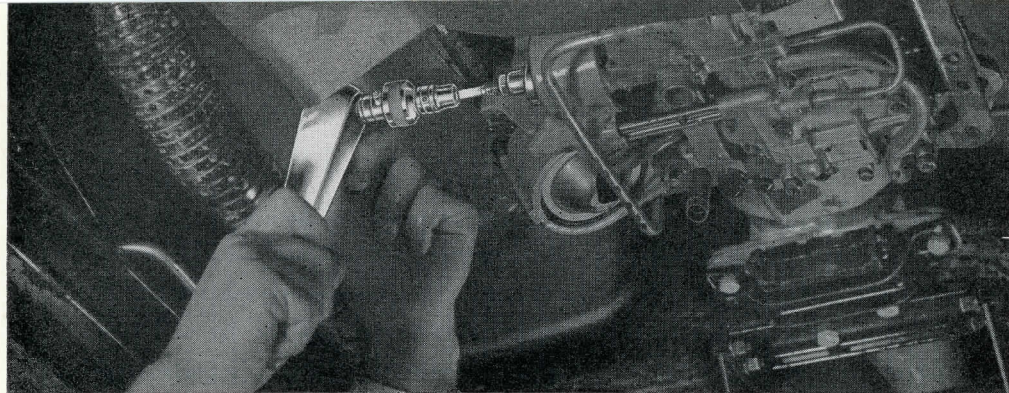
Snap-on^{*} • *Blue-Point*[®] • SERVICE TOOLS

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CAN ANYONE

SERVICE AUTOMATIC TRANSMISSIONS?

Yes! People used to think the adjustment of automatic transmissions was the trickiest, most complex job on a car. This isn't true anymore! It's been simplified to a point where anyone can do it who has a fundamental knowledge of mechanics, the ability to follow directions and the proper tools.

When Henry Ford made his first cars, they were playthings that only a few could afford—now almost everybody has one. It's the same with automatic transmissions—now just about everybody has one kind or another on their car. And they all require adjustments to keep them in good running order. **THIS IS YOUR CHANCE!** You may be one of the first in your town or neighborhood to handle band and linkage adjustments of Dynaflow, Flashomatic, Flashaway, Flightomatic, Fordomatic, Hydramatic, Jet-away, Mercomatic, Powerflite, Powerglide, Turbodrive, Torqueflite, and Ultramatic. Yes, all these with the same set of tools.

The first and only **UNIVERSAL** automatic transmission tools for external adjustment on the market are Snap-on's. With these tools, you can begin building a new and top-profit-making business. You're right on the ground floor and the next step is up!

In this booklet you will find an easy step-by-step guide for adjusting various automatic transmissions. The procedures outlined will enable you to handle most transmission adjustments. In general, approximately 75% of the transmissions serviced are merely adjustments and the balance would be classified as major repairs. We recommend that major repairs be undertaken only by a qualified serviceman or an automatic transmission specialist. In this booklet you will find information to help you decide whether any particular transmission merely needs adjusting or whether it should be handled by an expert.

Procedures shown in this manual are based on the use of *Snap-on* tools. If no special tools are needed to make linkage adjustments we do not go into the subject because of the great variety and complexity of linkage hook-ups. More information is available in Paul-Marsh manuals which can be purchased from your *Snap-on* dealer, and in all shop manuals.

More and more importance is being placed on making adjustments with the use of pressure gauges. Anyone who serves transmissions should have not only the *Snap-on* Automatic Transmission Set, but also the AT-67-MB set of pressure gauges.



AUTOMATIC TRANSMISSIONS ARE MARVELOUS ACHIEVEMENTS OF ENGINEERING SKILL. IN MANY CASES ADJUSTMENTS MUST BE MADE TO A FINE AND PRECISE DEGREE TO HAVE TOP PERFORMANCE. THEREFORE ALL PROCEDURES INVOLVING THE ADJUSTMENTS OF AUTOMATIC TRANSMISSIONS AS SET FORTH HERE AND BY THE MANUFACTURER OR OTHER AUTHORITIES SHOULD BE NOTED WITH GREAT CARE.

What Steps Should be Taken in Making Adjustments?

1. Make the "pre-checks" explained in the following pages. They will enable you to determine whether adjustment or major repairs are required. Failure to make prechecks can lead you into jobs you are not equipped to handle.
2. If it is necessary to adjust the bands, then also, adjust or check the linkage. There is a relationship between the two, and the transmission will not operate properly unless both adjustments are correct.
3. After the adjustments are made road test the car to be sure bands apply smoothly, there is no slippage, and that upshifts and downshifts occur at the correct speeds.

Why Do Automatic Transmissions Need Adjustment?

They must be adjusted periodically because:

1. Normal driving causes the bands to wear. This condition causes transmission slippage and a time-lag in gear shifts. On most Automatic Transmissions, band wear can be corrected by a simple manual adjustment.
2. Everyday use also causes wear and misalignment of the throttle-linkage. Correct adjustment of linkage is essential in maintaining a proper relation between the accelerator, carburetor, and transmission. This adjustment can be made easily when the service shop is equipped with the needed tools and gauges.

When Do Automatic Transmissions Need Adjustment?

Adjustments should be made when:

1. The car has gone approximately 15,000 miles since the last adjustment. Manufacturers recommend that bands and linkage be adjusted at regular intervals, as a routine maintenance measure. The interval specified will vary, but the average is about 15,000 miles.
2. The automatic transmission does not operate smoothly. For example, if the car jerks during upshift or downshift, or the transmission slips during gearshift, or shifts at the wrong speed.

What Happens When the Adjustment is not Made?

If wear and misalignment are not corrected regularly, vital parts will be subjected to severe abuse. Although an automatic transmission is an intricate mechanism, failures are rare if all moving parts are working in smooth coordination. When a worn band grabs a fraction of a second too late or out-of-line throttle linkage exists, needed coordination is plainly lacking. These conditions, if allowed to continue would lead to accelerated wear and eventually to costly failures. In addition, an automatic transmission that is not correctly adjusted will often cause gasoline waste and poor all-round car performance.

Automatic transmission adjustments are a necessary part of a car maintenance routine. They are fully as important as regular lubrications and crankcase oil changes—and the same reasons apply: protection, performance, and economy. An automatic transmission adjustment, performed when needed, will often save your customer some staggering repair bills.

PRE-DIAGNOSIS CHECKS

Check the engine to make sure it is not the cause of improper transmission operation. Often what may seem to be transmission trouble is actually an engine improperly adjusted. Because of the close relationship through linkage connections, any work on the carburetor or the installation of a new carburetor demands a check or adjustment of throttle linkage. Before starting adjustments on the automatic transmission, be sure that the engine does not stall, miss, backfire, or hesitate at any speed. The idle speed should be set according to specifications. There should be no unusual knock or noise.

Check the transmission fluid level carefully. It must be exactly at the full mark. The following method is recommended because it's the only way to insure an accurate reading:

1. Before checking the fluid level, block the wheels and set the hand brake firmly.
2. Start the engine and run the selector lever through its ranges, then set it in neutral.
3. Run the engine at fast idle for two minutes.
4. Reduce engine speed to normal idle.
5. Clean any dirt around the dip-stick, then pull it out and clean it with a clean lint-free cloth. Put it back in the filler hole all the way, then remove it and check the oil level.
6. If the level is low, add only enough transmission fluid to bring it to the "F" mark. If it is over the full mark, drain enough to bring it to the correct level. Overfilling causes foaming which in turn causes inaccurate oil pressure readings.

Check the linkage because bent or worn parts can cause erratic transmission action. If any linkage sticks, binds, or if there are signs of excessive wear, the condition must be corrected. Check:

1. The linkage from the accelerator pedal to the carburetor.
2. The linkage from the accelerator pedal to the transmission throttle lever.
3. The linkage from the selector lever to the manual control lever on transmission.

Check oil pressures. Checking oil pressures is one of the most important steps in pin-pointing trouble and should be made before any attempt is made to adjust bands. Oil pressure tests should be made during actual road tests. *Snap-on* AT-67MB pressure gauge set, which comes complete with fittings and instructions, is a "natural" for this job.

To make oil pressure checks:

1. First clean the area around the pipe plug.
2. Remove the pipe plug, using a 7/16" six point socket or a boxsocket.
3. Select a suitable adaptor and install in place of the pipe plug. Connect the oil pressure gauge with the quick-coupler making sure it is locked on tight.
4. Check pressures while making road tests if necessary, and compare with specifications on pages 16 and 17. If pressures are not within specifications, more extensive work is required than mere adjustments. An exception would be a transmission with more than 25,000 miles of service where idle pressure may be as low as 30 psi without affecting its efficiency.

Unusual noises on a road test, such as grinding noises indicating worn bearings, squealing, or rubbing sounds indicating worn or abused parts, are an indication for the mechanic to leave the transmission alone and recommend the car owner to an automatic transmission specialist.

Oil leaks should be corrected to prevent serious damage to internal units. Four points which might show signs of leakage are:

1. The oil pan drain plug.
2. The bottom oil pan.
3. The side pan (if transmission has one).
4. The rear bearing oil seal.



Figure 1

BAND ADJUSTMENTS

Adjusting Hydramatic Transmissions

There are two methods of adjusting the bands on the Hydramatic transmission, external and internal. In the external method, adjustments are made through the floorboard, using the band adjustment tool (ATC-50A or AT-50) and a Tachometer (MT-415A). The internal method of adjustment requires the transmission oil pan be drained and removed. The internal method can be used when the transmission is off the car and on a bench; while the external method can only be used with the transmission on the car. It should be noted that the external method of adjustment is quicker, since the transmission need not be removed from the car, nor requires oil drainage. The internal method of adjustment may be more time consuming and expensive because of a new oil pan gasket and the draining and subsequent refilling of the oil pan. However, internal adjustments are considered more accurate.

FOR ALL EXTERNAL ADJUSTMENTS

1. Set hand brakes firmly and block front wheels securely to prevent forward motion during adjustments.
2. Remove accelerator pedal, floor mat, and adjusting hole cover.
3. Run engine until temperature is normal.
4. Connect Tachometer (MT-415A) to distributor.
5. Position selector lever in "DR" range. Except 1950-51 Oldsmobiles. These should be positioned in "Low".
6. Set carburetor idle speed screw so engine idles at 700 rpm.

FRONT BAND ADJUSTMENT

1. Using band adjusting tool (ATC-50A or AT-50) and 5/16" square socket (F-310), loosen forward lock nut by turning adjustment tool handle counter-clockwise. Engage adjusting screw by slowly turning "T" handle until the inner socket is seated. Fig. 1.

2. Turn "T" handle slowly in a counter-clockwise direction until engine speed reaches 900-1000 rpm. This loosens the band adjusting screw which allows drum to spin freely.

Important: If the engine fails to increase speed to 900-1000 rpm, the transmission oil pan should be drained and removed. If no internal damage is apparent, then adjust both bands using the *internal method* of adjustment.

3. Turn the adjusting screw by turning "T" handle slowly clockwise until engine speed returns to 700 rpm.
4. Loosen band adjusting screw by turning "T" handle counter-clockwise until Tachometer shows engine speed has increased. Tighten again very slowly until engine speed returns to 700 rpm. Watch Tachometer for about 30 seconds, and if engine speed creeps up beyond 700 rpm, tighten adjusting screw clockwise with "T" handle 1/10th of a turn as indicated on counter dial. Watch Tachometer, and continue process of tightening 1/10th turns until engine speed remains at 700 rpm for at least 30 seconds.

Note: The object of loosening and re-tightening the screw is to locate exact point at which the band stops the drum from spinning.

5. Set counter on band adjusting tool to 00. Make sure gear button on counter of band adjusting tool is in "B" position.
6. Hold adjusting tool handle stationary and tighten "T" handle clockwise exactly 6.5 turns for units through 1951 and 7.7 turns for 1952 and later models. Reset engine idle to proper speed as recommended in the Service Manual. (Place shift lever in "N" range while resetting.)
7. Hold "T" handle stationary, and tighten lock nut with adjusting tool handle.

REAR BAND ADJUSTMENTS

1. Repeat operations 1 through 5 above in the Front Band Adjustment procedure. Fig. 1.
2. Position shift lever in "N" range.
3. Hold handle of adjusting tool stationary, and tighten adjusting screw two turns by rotating "T" handle in a clockwise direction.
4. Position shift lever in "Drive" range.
5. Hold adjusting screw stationary with "T" handle and tighten lock nut with handle of adjusting wrench.
6. Reset engine idle to proper speed. Consult the Service Manual for this information. Place shift lever in "N" range while resetting.

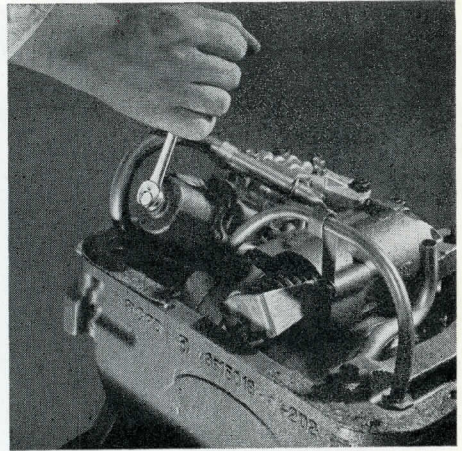


Figure 2

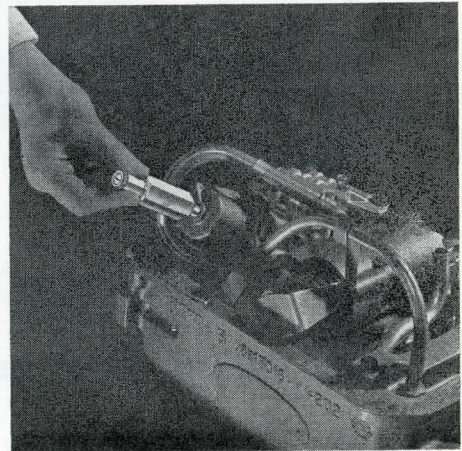


Figure 3

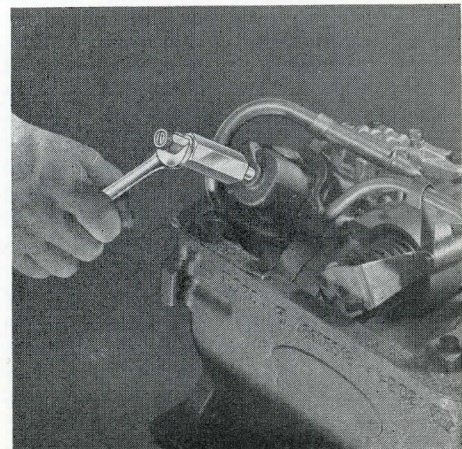


Figure 4

FOR ALL INTERNAL BAND ADJUSTMENTS

1. Place front end of car on car jacks or raise car on hoist.
2. Remove oil pan drain plug to drain fluid.
3. Remove oil pan, gasket and oil screen.
4. Remove accelerator pedal and lift driver side of floor mat.
5. Remove band adjusting port cover.
6. Loosen lock nuts.

FRONT BAND ADJUSTMENT

1. Using band adjusting tool with gear shift button in "A" position, (ATC-50A or AT-50) and 5/16" sq. socket (F-310), loosen band adjusting screw counter-clockwise five turns with "T" handle.
2. Remove pipe plug from front servo body. Fig. 2.
3. Loosen 9/16" hex adjusting screw of the AT-52 gauge until stem is drawn in flush with the outer case of gauge.
4. Screw gauge into front servo body, tightening by hand *only until finger tight*.
5. Tighten 9/16" hex adjusting screw of the gauge with fingers until stem of gauge is felt to JUST touch the piston within front servo body. Fig. 3.
6. With a 9/16" wrench (OEX-18) continue tightening adjusting screw of gauge five full turns from point where it was felt by hand that stem of gauge JUST touched the piston. Fig. 4.
7. Using band adjusting tool (ATC-50A or AT-50) tighten band adjusting screw clockwise with "T" handle until knurled cap of gauge is just free to turn. On 1954-56 Oldsmobiles and 1955-56 Pontiacs, except Jetaways, this step should be done as follows: Remove the lock nut spring from its seating on the front band anchor lock nut (see Fig. 5). Turn front band anchor lock nut until knurled cap on gauge is just free to turn. Install anchor lock nut spring. The automatic transmissions used on 1954-56 Oldsmobile and 1955-56 Pontiac (except Jetaway) can be easily recognized by the pitch or angle of the servo body. Figures 1 through 5 illustrate these later transmissions. Figure 6 shows the older type transmission with the servo body (and the gauge in it) straight up and down.

Note: If spring hole is not visible, tighten nut not over one notch.

Important: Be sure that the band is centered on the drum while tightening the adjusting screw.

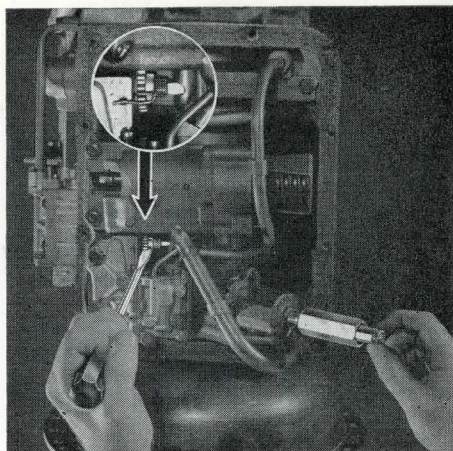


Figure 5

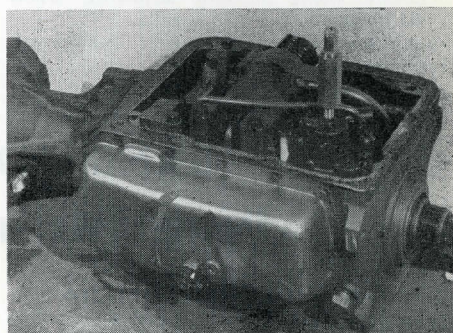


Figure 6

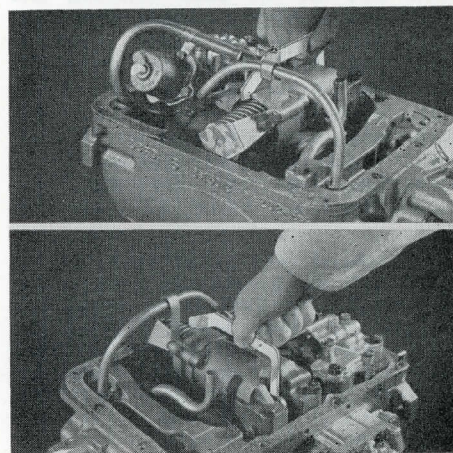


Figure 7

8. Using band adjusting tool (ATC-50A or AT-50) tighten lock nut with handle of the adjusting tool, while holding adjusting screw securely with "T" handle.
9. Loosen 9/16" hex adjusting screw on gauge at least six turns and then re-

move gauge from servo body. Re-install pipe plug in servo. Fig. 6.

REAR BAND ADJUSTMENT

1. Place the servo gauge (AT-54) on finished surface of accumulator body with leg of gauge resting on the rear servo stem. Fig. 7.
2. Back-off rear band adjusting screw using band adjusting tool (ATC-50A or AT-50) until fact of actuating lever, which works against servo, is well away from face of gauge (AT-54).
3. Tighten rear band adjusting screw with band adjusting tool until the face of band actuating lever just touches gauge. It is important that this step be done accurately. Fig. 8.
4. Tighten band adjusting screw lock nut with handle of band adjusting tool securely while holding adjusting screw stationary with "T" handle.

(See page 19 for Hydramatic linkage adjustments).

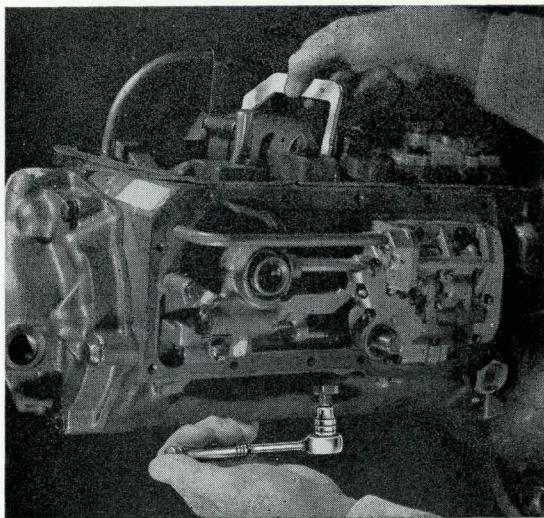


Figure 8

BAND ADJUSTMENTS

Powerflite and Torqueflite

For front (called kick-down) band adjustments on all Powerflite and Torqueflite transmissions (except 1957 models) the tools used are the band adjusting tool (ATC-50A or AT-50) a small Torqometer (TQ-12B) and a 5/16" square socket (F-310). On 1957 Powerflite and Torqueflite an AT-68 adaptor and a TQ-12B Torqometer is needed. For rear (reverse) band adjustments, the tools used are TQ-12B, FS-101 socket and FX-6 extension on all Powerflites. On 1957 Torqueflite low-reverse band use AT-68, FX-6 and TQ-12B.

Adjustments with these tools can be made with the transmission either on or off the car. If there is no access hole through the floor board, TQ-12B and AT-68 should be used or else the transmission must be taken out of the car. Actually, all Powerflite front band adjustments can be made with TQ-12B and AT-68 but more accurate adjustments are made through the access hole with ATC-50A or AT-50.

POWERFLITE

Front Band thru 1956

1. Remove accelerator pedal and roll back left-side of the floor mat, and remove band adjusting access hole cover.

2. Using band adjusting tool (ATC-50A or AT-50), Torqometer (TQ-12-B), and 5/16" square socket (F-310), loosen front band lock nut; check freeness of adjusting screw in transmission case. If it is free, tighten band adjusting screw 60 to 72 inch pounds. Fig. 9.

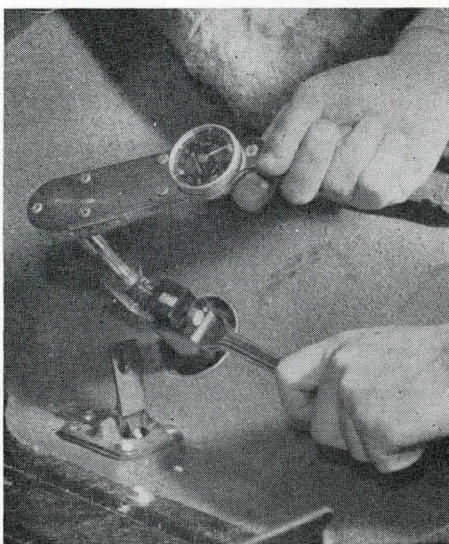


Figure 9

3. With counter set at 00, and counter shift button at "A" position, back-off adjusting screw by turning the Torqometer handle counter-clockwise three turns as indicated on counter dial. Fig. 9.
4. Holding adjusting screw stationary with handle of Torqometer, tighten lock nut with band adjusting tool handle. Care must be taken that this operation be performed accurately, or serious damage will occur during operation.
5. Replace access hole cover, floor mat, and accelerator pedal.

FRONT KICK-DOWN) BAND ADJUSTMENTS FOR 1957

Use AT-68 and TQ-12B to adjust front band on 1957 Powerflite with transmission on the car. Loosen front band lock nut; check freeness of adjusting screw in transmission case. If free, tighten band adjusting screw 30 to 36 inch-pound reading on the torqometer (with use of AT-68, this amounts to actual torque of 60 to 72). Now back off adjusting screw three turns. Tighten lock-nut about 40 foot pounds while holding adjusting screw stationary.

REAR (REVERSE) BAND ADJUSTMENT THRU 1957

1. Drain transmission fluid and remove transmission oil pan and screen.
2. Loosen reverse band adjusting screw lock nut. Using Torqometer (TQ-12-B) and 5/16" hex socket (FS-101), and extension (FX-6) tighten the adjusting screw 20 to 25 inch pounds.
3. Using the handle of the Torqometer, back-off adjusting screw counter-clockwise ten turns.
4. Holding adjusting screw in this position, tighten lock nut 30 to 35 foot pounds. Check torque with a Torqometer (TQ-50AF).
5. Replace transmission oil pan with new gasket and refill with transmission fluid.

TORQUEFLITE TRANSMISSION FRONT (KICK-DOWN) BAND ADJUSTMENTS

To adjust kickdown (front) band use AT-68 and TQ-12B. The adjusting screw is on the left side of the transmission. With the lock nut loose, tighten the adjusting screw 30 to 36 inch-pounds on the torqometer (by using AT-68 with Torqometer this actually amounts to 60-72 inch-pounds). Now back off adjusting screw 3-1/2 turns. Tighten the lock nut 35 to 40 foot pounds while holding the adjusting screw stationary. Figure 10.

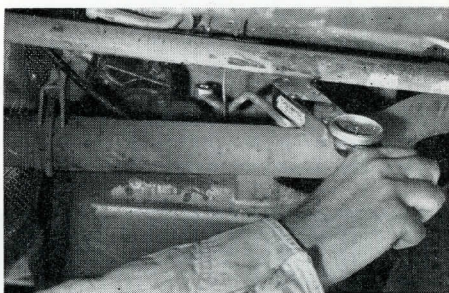


Figure 10

LOW-REVERSE ADJUSTMENT

The low-reverse band adjusting screw is on the right side of the transmission. Using AT-68, TQ-12B and FX-6 extension, and with the lock nut loose, tighten the adjusting screw to 70-75 inch-pounds (a reading of 35-38 inch-pounds on the Torqometer). Now back the adjusting screw 2-5/8 turns. Holding the adjusting screw stationary tighten the lock nut from 35 to 40 foot-pounds. Figure 11.

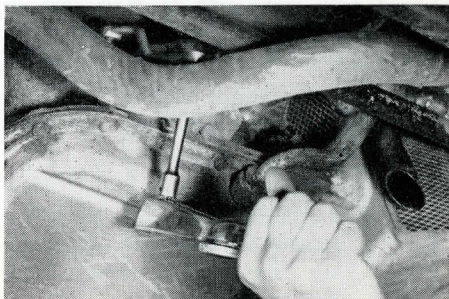


Figure 11

BAND ADJUSTMENTS

Adjusting Fordomatic, Mercomatic, 1955-57 Lincoln Turbo-Drive, Studebaker Flightomatic Transmissions and Flashomatic

FRONT BAND ADJUSTMENTS

1. Drain fluid from transmission and remove oil pan, gasket and fluid screen.
2. Loosen front servo adjusting screw lock nut two full turns with 9/16" wrench (OEX-180), and pull back on actuating rod. Insert 1/4" gauge block (AT-60) between the servo piston stem and the adjusting screw. Using a small Torqometer (TQ-12B), a ratchet adaptor (F-67-B), and screw driver bit (AT-56), tighten adjusting screw to 10 inch pounds. The ratchet adaptor is used for aid and convenience in positioning the screw driver bit to turn the adjusting screw. Fig. 12.
3. Using same tools (Torqometer, ratcheting adaptor, and screw driver bit), reverse direction of ratcheting adaptor and back-off adjusting screw exactly one complete turn. Fig. 12.
4. Holding adjusting screw stationary, tighten lock nut clockwise with 9/16" wrench (OEX-180) to about 20 to 25 foot pounds torque; check torque with Torqometer (TQ-50AF). Observe adjusting screw to make sure it does not turn in process of tightening lock nut. Fig. 12. Remove gauge block.
5. Install fluid screw and pan using new gasket and refill with fluid.

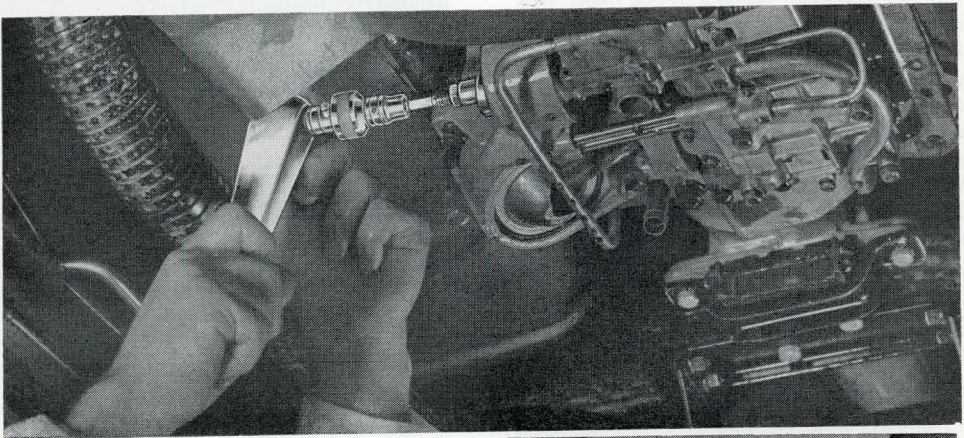


Figure 12

REAR BAND ADJUSTMENTS

1. Fold back right side of floor mat to expose access hole in right center of floor-board. Remove access hole cover.
2. Using band adjusting tool (ATC-50A or AT-50), loosen rear band adjusting screw lock nut. Fig. 13.
3. Attach a 5/16" square socket (F-310) to band adjusting tool, and in place of "T" handle on band adjusting tool, attach the small Torqometer (TQ-12-B). Tighten the adjusting screw to 120 inch pounds. Fig. 14.

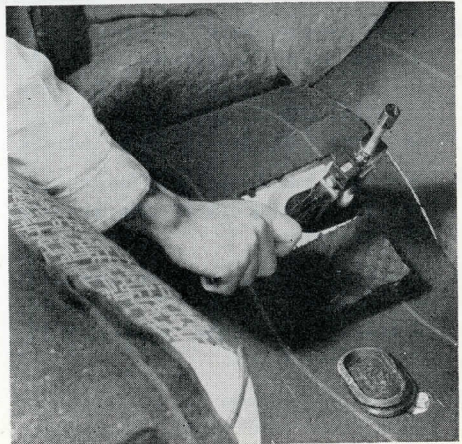


Figure 13

4. With counter set at 00, and gear shift button at "A" position, back-off adjusting screw with "T" handle one and one-half turns. The counter dial of the band adjusting tool should read 1.5 at this point. Fig. 14.
5. Hold adjusting screw stationary with "T" handle, using band adjusting tool. Tighten adjusting screw lock nut to about 35 to 40 foot pounds torque; check torque with Torqometer (TQ-50F). Make sure adjusting screw does not turn in tightening process.
6. Install access hole cover and replace floor mat.

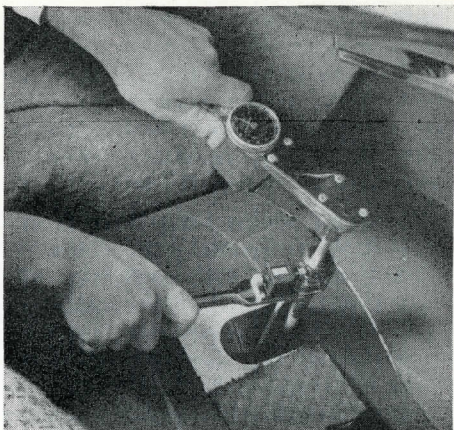


Figure 14

BAND ADJUSTMENTS

Adjusting Powerglide Transmissions

Adjustments must be done with the transmission out of the car and on a bench.

LOW BAND ADJUSTMENTS

The low band adjustment is on the left side of the transmission case, as illustrated.

1. Tools used to adjust the low servo band is the band adjustment tool (ATC-50A or AT-50), and for model cars up to and including early 1953 models, a screw driver bit (AT-56) is used. For late model '53 cars to '57's, the 1/4" hex bit (AT-55) is used. Using the proper bit for the band adjustment tool, loosen the lock nut and tighten the screw with "T" handle clockwise until tight. Fig. 15.
2. With counter dial of the band adjusting tool set at 00, and gear shift button in "A" position, back-off adjusting screw by turning the "T" handle counter-clockwise 4 complete turns. With handle of band adjustment tool, tighten lock nut. Fig. 15.
3. Replace adjusting screw cap.

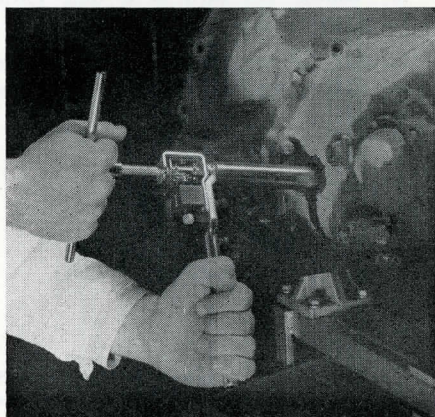


Figure 15

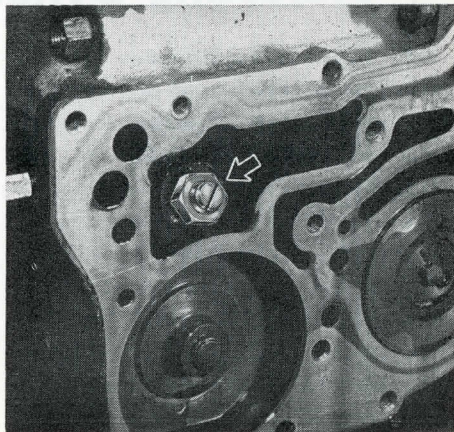


Figure 16

REVERSE BAND ADJUSTMENTS

The reverse band is adjusted from right side of transmission case with servo cover removed. The adjustment screw is

readily visible through the opening in the housing which is located above the servo return spring. Fig. 16. The adjustment of this reverse band is a sensitive one and must be done carefully. It is an operation usually performed while re-assembling the Powerglide unit.

1. Rotate the reverse brake drum to center it in the reverse band. Using the band adjusting tool (ATC-50A with gear shift button in "A" position or AT-50) and a screw driver bit (AT-56), loosen lock nut, and tighten adjusting screw until all end play between linkage and band is removed without compressing band. Fig. 17. The reverse drum must be free to rotate after the end plate has been removed. If reverse drum is not free to rotate after this adjustment has been made, back-off adjusting screw with "T" handle 1/4 turn at a time until the drum is free to rotate. Fig. 18.
2. Tighten the lock nut, making sure the adjusting screw does not turn in the process.

(See page 20 for linkage adjustment).

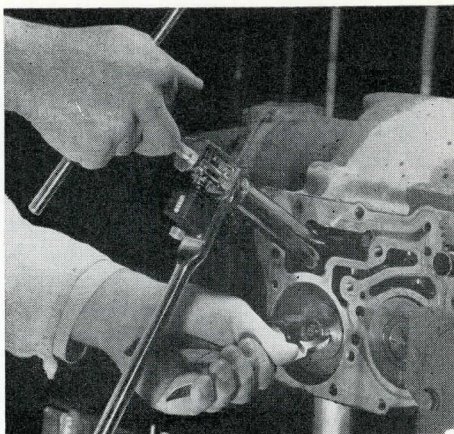


Figure 17

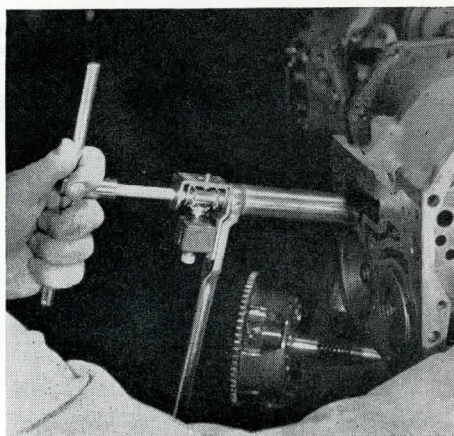


Figure 18

BAND ADJUSTMENTS

Adjusting Dynaflo Transmissions

The bands of the Dynaflo unit are used only in reverse and in low; therefore, any external adjustments on the Dynaflo transmission should be done while the gear shift lever is in these positions. Chatter or slip in low or reverse may be due to improper band adjustment. A very slight chatter just as the car starts to move in reverse, but which disappears as soon as the car is in motion, may be considered normal. Band adjustments should be made if the chatter is severe enough to be objectionable.

Adjustments on Buick models from 1948 to 1950 can be made by removing the front floor mat, floor board access cover, and band adjustment covers. This exposes the band adjusting screws. On 1951 and later models, the transmission must be removed from the car. See Fig. 19 for location of band adjusting ports.

The procedure for adjusting either low or reverse band is the same and should be done as follows:

1. Remove band adjustment covers and gaskets, using a tool such as the Snap-on offset screw driver No. 040.

2. Using the standard screw driver bit (AT-56) and band adjustment tool (ATC-50A or AT-50), place outer socket of adjusting tool over the lock nut, and engage the screw driver by slowly rotating the "T" handle.
3. Hold "T" handle stationary, and loosen lock nut by turning wrench handle in a counter-clockwise direction.
4. Turn "T" handle clockwise, tightening adjusting screw, until resistance is felt. This indicates that bands are in full contact.

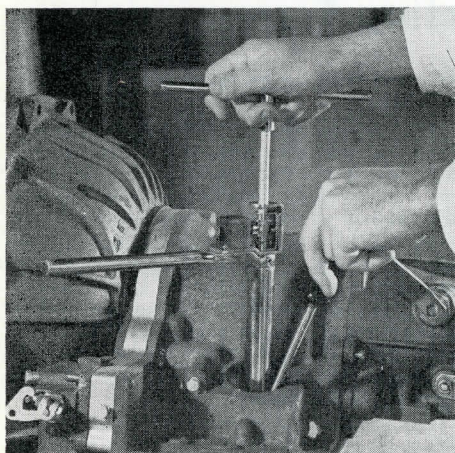


Figure 19

5. Turn "T" handle until just a bit of play can be felt by jiggling the lock nut with a screw driver in other hand. Fig. 19 and 20. Set counter indicator at 00 and gear shift button in "A" position. Back-off adjusting screw by turning "T" handle six complete turns as indicated on counter dial. Tighten lock nut, making sure the adjusting screw does not turn in the process.
6. Remove band adjusting tool. Tighten the lock nut to 20 to 25 foot pounds torque. Check torque with a Torqometer (TQ-50AF).
7. Using a new gasket, replace band adjustment covers.

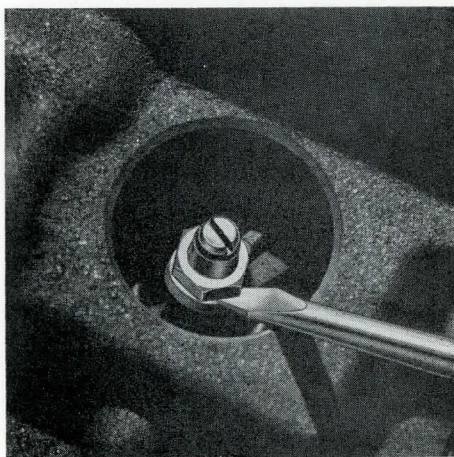


Figure 20

BAND ADJUSTMENTS

Adjusting Ultramatic Transmissions

Adjustments on all Ultramatic units are the same. The only variations are between lock nut and adjusting screw sizes. These variations exist between the 55 Packard Ultramatic and pre-55 units. The 55 Nash Ultramatic also has different nut and screw sizes than either of the Packard units.

ULTRAMATIC LOW AND REVERSE BAND ADJUSTMENTS

Low and reverse band adjustments are made in the same manner, as follows:

1. Loosen band adjusting screw lock nut.
2. Tighten adjusting screw to 20 foot pounds torque.
3. Back-off adjusting screw 1-3/4 complete turns. Lock in position by tightening lock nut securely.

PRE-55 PACKARD ULTRAMATIC—adjustments with these tools are done with transmission off car.

Adjusting screws: use a 5/8" square socket with 3/8" drive (F-320) and 3/8" drive Torqometer (TQ-50AF).

Lock nut: use a 15/16" hex socket with 1/2" drive (S-301 or OEX-30).

55-57 PACKARD ULTRAMATIC — adjustments with these tools are done with transmission off car.

Adjusting screws: use a 5/8" hex socket with 1/2" drive (SW-201) and 1/2" drive Torqometer (TQ-51A). Or use a 3/8" drive socket (F-201) and 3/8" drive Torqometer (TQ-50AF).

Lock nut: use a 1-1/16" hex socket with 1/2" drive (S-341).

55-56 NASH ULTRAMATIC—adjustments with transmission off car.

Low band adjusting screw: use a 3/4" square socket with 1/2" drive (SW-424) and 1/2" drive Torqometer (TQ-51A).

Reverse band adjusting screw: use a 5/8" hex socket with 1/2" drive (SW-201) and 1/2" drive Torqometer (TQ-51A).

Lock nut: use a 1-1/16" hex socket with 1/2" drive (SW-341).

55-56 NASH ULTRAMATIC—adjustments with transmission on car.

Low band adjusting screw: use a 3/4" crowfoot (FCO-24) and 3/8" drive Torqometer (TQ-50AF).

Reverse band adjusting screw: use a 5/8" crowfoot (FCO-20) and 3/8" drive Torqometer (TQ-50AF).

PRESSURE METHOD

Of Checking and Adjusting Transmissions

Shop manuals are putting more importance on using oil pressure readings as a means of locating the defective components of an automatic transmission and properly setting linkage adjustments. Snap-on AT-67-MB Gauge Set will handle all automatic transmissions. This set has a 100 pound gauge for throttle pressure readings and other low pressure applications, and a 300 pound gauge for high pressure applications such as making stall tests. The Ford shop manual insists on using the pressure method in making linkage adjustments as explained on page 24 of this booklet.

The following pages contain pressure readings which are used in conjunction with linkage adjustments. We do not attempt to give readings for transmissions such as Dynaflo, Power-glide, and Turbo-glide, since no adjustment can be made

to correct wrong pressures except a major overhaul.

On Hydramatic transmissions, except Jetaway, the pressure take-off is on the left side of the transmission. For Jetaway, or "Controlled Coupling" transmissions, the take-off is under the rear pump.

Powerflite and Torqueflite have three take-off plugs. The line pressure plug is located at the left front of the transmission case; the throttle pressure take-off is located on the right side of the transmission case; the governor-pressure take-off is located on the lower left side of the output shaft support.

On *Fordomatic, Mercomatic, and Turbo-drive* transmissions, the take-off plug is located forward of the transmission levers. On some models (Thunderbirds and Station Wagons) it may be located on the rear face of the transmission case.

PRESSURE CHARTS

FORDOMATIC — MERCOMATIC — TURBODRIVE

NOTE: For "idle" tests, set selector at "DR". Make "Drive test at 1000 RPM. Make "stall" tests quickly.

CAR and YEAR	IDLE	DRIVE	STALL "R"	STALL "DR"
FORD				
1952-54	60-80	87	140-165	120-145
1955 (V-8)	50-63	70	175-190	130-150
1955 (6)	47-60	67	166-182	122-142
1956-57 (V-8)	51-69	80-85	181-205	133-165
1956-57 (6)	49-69	80-85	173-195	124-155
MERCURY				
1952-53	60-80	87	140-160	120-145
1954	76-96	103	154-186	120-145
1955	45-68	75	154-186	125-155
1956-57	56-70	80	195-220	150-175
LINCOLN				
1955-57	56-70	80	150-175	195-220

POWERFLITE and TORQUEFLITE

NOTE: For Chrysler, Dodge, DeSoto, and Plymouth. Do not hold throttle open for for more than a few seconds with brakes on.

POWERFLITE (All)	SECTOR	REAR WHEELS	THROTTLE	RPM	MPH	PRESSURE
Line Pressure Tests	R	Free		1400		250
	N	Brakes on		800		90
	D	Brakes on		800		90
	L	Brakes on		800		90
Throttle Pressure Tests	D	Brakes on	Closed	450		14
	D	Brakes on	Wide Open	1500		90
Governor Pressure Tests	D	Free			12-16	15
	D	Free			19-26	45
	D	Free			41-62	60
TORQUEFLITE (All)						
Line Pressure Tests	R	Free		1600		200-250
	N	Free		800		85-95
	D	Free		800		90
	2	Free		800		85-95
	1	Free		800		85-95
Governor Pressure	D	Free			16-18	14
	D	Free			29-35	45
	D	Free			61-66	75

HYDRAMATIC

NOTE: For "idle" tests, set selector at "N". Pressure listed is minimum. Make "Reverse" test and "Drive" tests at 1200 RPM. All readings are pounds per square inch.

CAR & YEAR	IDLE	REVERSE	DRIVE	CAR & YEAR	IDLE	REVERSE	DRIVE
CADILLAC				OLDSMOBILE			
1951	45	150-220	80-100	1951	45		80 (Max)
1952-53	50	150-190	97-105	1952	50	135-175	80-93
1954	50	145-185	110-118	1953	50	145-185	90-98
1955	50	176-210	114-122	1954-55	50	145-185	101-109
1956-57	50	145-190	90-105	1956-57	50	145-190	80-105
HUDSON				PONTIAC			
1951	45	140-210	80-88	1951	45	140-210	80-88
1952 (Z)	45	145-210	80-88	1952-54	50	145-185	90-98
1952 (H, J)	50	135-175	85-93	1955	50	145-185	101-109
1953-54	50	135-175	85-100	1956-57	50	145-190	90-105
1955	50	135-175	85-100				
1956-57	50	145-190	90-105	NASH			
				1951	45	140-210	80-88
				1952	50	135-175	90-98
				1953-55	50	140-180	85-95
				1956-57	50	145-190	90-105

LINKAGE ADJUSTMENTS

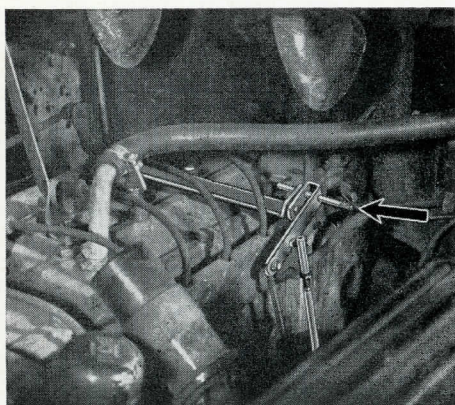


Figure 21

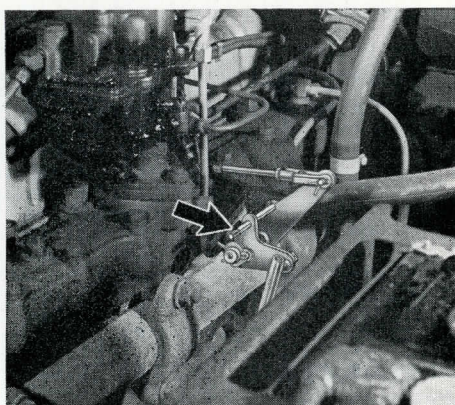


Figure 22

Throttle Control Linkage Adjustments

When throttle linkage is properly adjusted, there is a correct relationship between the accelerator, carburetor, and transmission. The linkage should be so connected that a movement of the accelerator pedal causes a simultaneous change in the engine speed and transmission throttle pressure. In other words, the movement of the accelerator pedal, the carburetor, and the transmission throttle lever must be synchronized. Several factors connected with normal driving causes these parts to lose the close relationship and coordination required for smooth operation. One important factor is *wear* of linkage parts which causes slack in linkage and delay in transmission of the accelerator movements. Another important factor is *misalignment* which is caused by vibration, by settling of motor mounts, by stones thrown by the wheels and by mishandling of linkage during carburetor work.

Linkage wear and misalignment can usually be adjusted at the clevis or throttle jam nut. In other cases, misalignment can be corrected by bending parts back into proper position.

Because of the infinite variety of automatic transmission linkages in various makes and models, it is impossible to set down a list of procedures that can be applied to all cars. For specific information on any particular model, it is necessary to refer to the manufacturer's shop manual.

However, if the serviceman follows typical linkage adjustment procedures out-

lined in this booklet, and at the same time keeps the objectives of linkage adjustments in mind (proper relationship between carburetor, accelerator, and transmission), he can adopt a "common sense" approach to these adjustments that will guarantee good jobs and few comebacks.

Linkage adjusting pins (AT-57, AT-58, AT-59, AT-61, AT-62) are used for throttle linkage adjustments on Hydramatic, Fordomatic and Mercomatic units only. However, there are many variations of the use of these pins among the various car models that use these units. These variations, also, are changed many times from year to year for each car make. Consequently, no one general set of instructions can be provided which will account for all makes and models of cars using Hydramatic, Merc-o-matic, and Fordomatic units. In most cases it is best to refer directly to a shop service manual for the specific location for the adjusting pins on the linkages.

However, basic differences can be shown on the linkages of the various cylinder motors. Fig. 21 shows the location for the adjusting pin on Straight 8, and Fig. 22 shows location for 6 cylinder cars.

The purpose of the adjusting pins is to determine whether the various linkages are correctly aligned. In the event that a pin does not correctly fit through its openings, it is an immediate indication that the linkages should be adjusted—either at a clevis or a trunnion jam nut.

OUTER THROTTLE LEVER ADJUSTMENTS

Hydramatic Thru 1955

The throttle lever gauge (AT-53A) is used to check the position of the outer throttle lever in relation to the machined surface at the back of the transmission case.

Procedure is as follows:

1. Clean machined surface at back of transmission case and place throttle lever checking gauge (AT-53A) flat against the surface with edge of gauge against transmission side cover. Care should be taken that edge of gauge is squarely aligned with transmission side cover. Fig. 23.
2. Adjust throttle lever gauge with its adjusting screw to correct position as indicated on the side of the tool that the pin holes are located. This will give the correct location of the sliding gauge for particular make and model cars. (The circled letter which accompanies year and make car indicates the position of the slide on the tool.) Fig. 23.
3. Swing the outer throttle lever to its furthest rearward position. If it is correctly aligned, a clevis pin can be put through the throttle lever opening, and the correct opening in the throttle lever gauge. The gauge should fit outside the lever, and should just touch the outer face of the throttle lever.
4. If the clevis pin does not pass clearly through the gauge opening then use throttle lever bending tool (AT-51). Bend lever in whichever direction is necessary. Avoid twisting the lever or springing the shaft during bending operation. Fig. 24.
5. Using throttle lever gauge (AT-53A), recheck throttle lever position and make sure it is in correct alignment.
6. Adjust rear transmission throttle rod clevis and transmission throttle lever toward rear, in its furthest rearward position. When clevis pin enters the holes, shorten clevis *two or three turns*. Connect rod to lever and tighten jam nut.

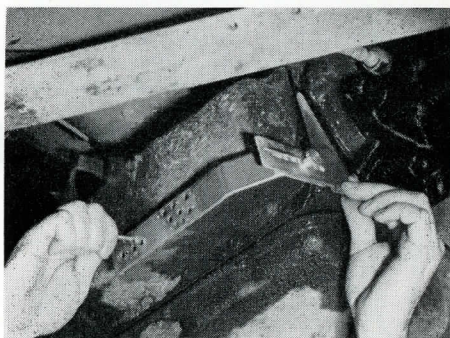


Figure 23

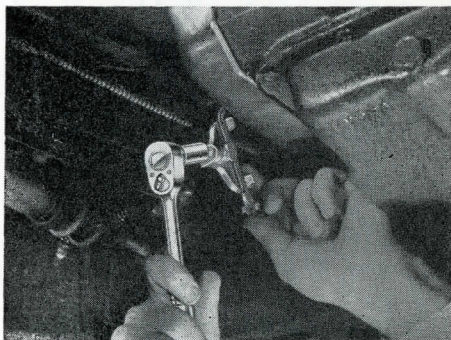


Figure 24

OUTER THROTTLE LEVER ADJUSTMENTS

For Jetaway and Nash Flashaway 1956-57

The throttle lever gauge (AT-69) is used to check the position of the outer throttle lever in relation to the machined surface at the back of the transmission case.

Procedure is as follows:

1. Clean machined surface at back of transmission case and place throttle lever checking gauge (AT-69) flat against the surface with pins resting on flange of transmission oil pan.

2. Swing the outer throttle lever to its furthest rearward position. If it is correctly aligned, a clevis pin can be put through the throttle lever opening, and the correct opening in the throttle lever gauge.
3. If the clevis pin does not pass freely through the gauge opening, then use throttle lever bending tool (AT-51). Bend lever in the direction necessary.

4. Using AT-69, recheck the throttle lever position to be sure it is in correct alignment.
5. Adjust rear transmission throttle rod clevis and transmission throttle lever toward rear, in its furthest rearward position. When clevis pin enters holes shorten by turning clevis until slack is gone.

Linkage Adjustment Oldsmobile 1954-1957

Oldsmobiles from 1954-1957 equipped with Rochester Four Barrel Carburetors require the AT-70 Throttle Linkage Gauge. To use the AT-70, remove the retainer clips from the throttle lever and bellcrank lever. Do not remove the carburetor rod. Place the gauge against the rod, with the hole in the gauge over the pin on the carburetor throttle lever.

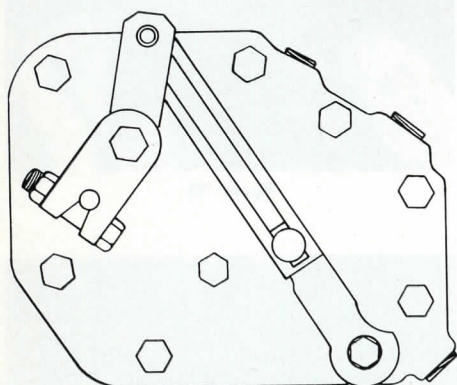
With the gauge held up against the bellcrank pivot pin, the open or hooked end of the gauge should fit over the pin on the bellcrank lever freely, without rotation of the bellcrank. If the pin does not enter the gauge freely, remove the rod, place in a vise and increase or decrease the bend as necessary. Install the rod, recheck with the gauge and replace the retainer clips.

POWERGLIDE

THROTTLE VALVE LINKAGE ADJUSTMENTS

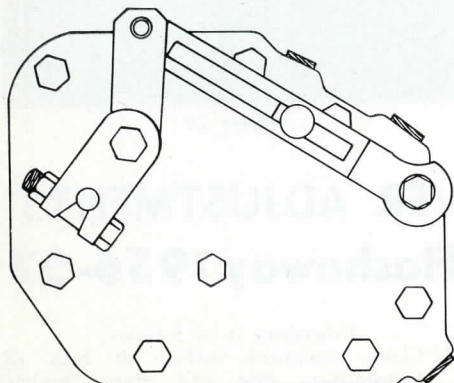
The tool used for throttle valve linkage adjustments, is the linkage gauge (AT-66A). A gauge is necessary for this adjustment on 1953 through 1957 6 and 8 cylinder Chevrolet models.

1. Check carburetor to make sure that automatic choke is entirely off and that throttle stop screw is against low step on the fast idle cam. The engine is off.
2. The outer throttle valve lever is located on the left side of the transmission, behind the torus cover and is connected on the valve body cover. Disconnect the long linkage rod from outer-throttle-valve-lever. This linkage rod leads from the valve lever to the throttle linkages on top motor block and connects to carburetor.
3. Rotate the valve lever assembly counter-clockwise to the open throttle position (all the way). Adjust the linkage gauge (AT-66A) to the proper length for the make and model car being worked on. The length of the tool will vary for 1953, 1954, and 1955 six-cylinder cars and for 1955 eight-cylinder cars.
4. Position the hole on the offset end of the tool on the valve body cover bolt indicated in Figures 25 to 28. If adjustment of outer valve lever is correct, the pin at the opposite end of the gauge tool should fit into the hole at the end of the valve lever. Figures 25 to 28.



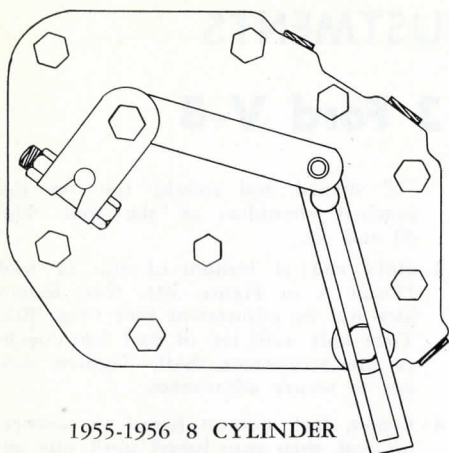
1955 6 CYLINDER

Figure 25



1956-1957 6 CYLINDER

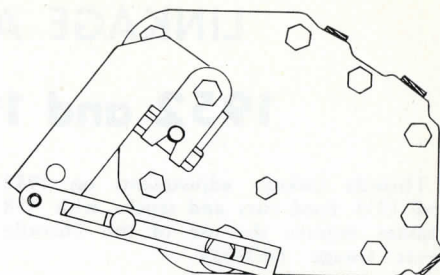
Figure 26



1955-1956 8 CYLINDER

Figure 27

5. If pin does not fit in the hole of the lever (indicating that adjustment is not correct), loosen the lever-to-clamp attaching screw, and make necessary adjustments. This adjustment is the



1957 8 CYLINDER

Figure 28

same for both 6 and 8 cylinder model cars.

6. Connect long linkage rod (which leads from motor) to the outer-throttle-valve-lever.

Note: The above linkage adjustment may be made either on the car or while the transmission is on the bench.

TURBOGLIDE

Linkage adjustments on the Turboglide can be made without any special tools or gauges. Here are procedures recommended by the manufacturer to obtain a proper relationship between the carburetor throttle lever and the transmission stator control valve.

1. Adjust idle speed at normal operating temperature to 400-450 r.p.m.'s. Set selector lever at "N" and stop the engine.
2. Remove the carburetor-to-transmission throttle rod from the throttle lever at the carburetor. Place the lever in a wide open position and pull the throttle rod forward until stator control spring pressure is over-

come and the lever at the transmission is bottomed.

3. With both parts in wide-open position, adjust the swivel on the throttle rod and re-connect into the throttle lever.
4. Place the linkage in the idle position, then rotate the throttle lever to the wide open position. Push upward on the throttle lever at the transmission and observe whether the adjacent throttle rod deflects. If the rod deflects, the stator control spring pressure has not been fully overcome. If this occurs, or if the throttle lever at the carburetor does not reach the full detent position, repeat the adjustment.

FORD SIX

Below is a typical throttle linkage adjustment which can be applied to most models of Ford-6's equipped with Fordomatic.

1. Turn the engine off and turn the selector lever to "N". Remove the clevis pin and cotter pin from the upper end of the throttle control rod. Pull the throttle control rod firmly until the throttle lever on the transmission is held against its internal stop.
2. Loosen the clevis lock nut. Turn the throttle rod clevis until the clevis

pin fits into the holes in the accelerator assembly shaft and in the clevis.

3. Lengthen the throttle control rod by turning the clevis two and one-half turns. Connect the throttle control rod to the accelerator assembly shaft with the clevis and cotter pins. Check the linkage for binding conditions.
4. If a road test reveals that the bands or clutches are still slipping, lengthen the throttle control rod to a maximum of three and one-half turns.

LINKAGE ADJUSTMENTS

1952 and 1953 Ford V-8

Throttle linkage adjustments on 1952 and 1953 Ford cars and trucks with V-8 engines require the use of the Throttle Lever Gauge (AT-63).

Throttle linkage adjustments of V-8 models is as follows:

1. Adjust the engine idle to 415-425 rpm with the engine at normal operating temperature and selector lever in "N" position. Adjust anti-stall dashpot. Turn off ignition.
2. For 1951 and 1952 cars, place linkage adjustment tool on cleaned finished surface of the cylinder block so that "L"-shaped rod passes through opening in tool. Be sure tool rests on finished surface of block and not on manifold gasket. On 1953 cars the

"L" shaped rod should rest on the notched shoulders of the tool. Fig. 29 and 30.

3. Hold rod at bottom of slot in tool (Point A in Figure 30), then loosen lock nut on adjustment bolt (Fig. 30). Turn bolt until leg of tool just touches the accelerator shaft. Tighten lock nut to secure adjustment.
4. Loosen lock nut on barrel to carburetor rod, then turn barrel until idle adjustment screw just touches its stop when rod is held at bottom of tool slot.
5. Tighten lock nut, and remove tool.
6. Continue adjustments according to shop manuals.

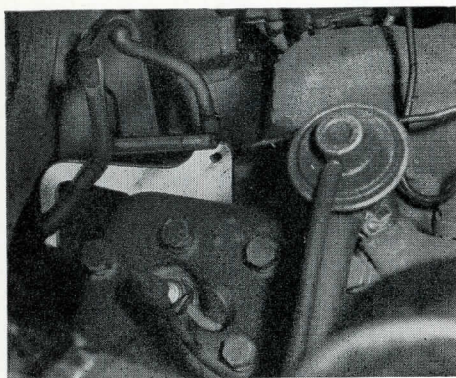
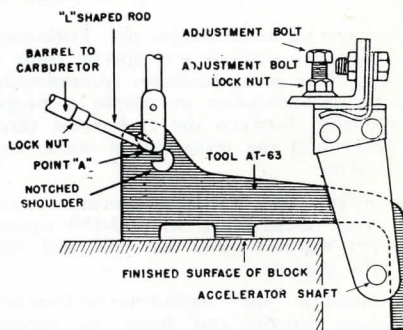


Figure 29



THROTTLE ADJUSTMENTS OF 1952-1953 FORD USING AT-63 GAUGE

Figure 30

1954 Ford V-8 Cars and Trucks

Throttle linkage adjustments on 1954 Ford cars and trucks with V-8 engines require the use of the throttle linkage gauge (AT-64). Linkage adjustments on 1954 Ford 6 cylinder cars can be done without a special tool; consult a shop manual for this.

Throttle linkage adjustment of V-8 model linkages is as follows:

1. Adjust engine idle speed to 445-455 rpm with the engine at normal temperature and selector lever in "N" range. Adjust anti-stall dashpot (see shop manual). Turn ignition off.
2. Thoroughly clean flat surface of accelerator rod assembly mounting bracket, then position throttle linkage adjustment tool (AT-64) as shown in

Fig. 31. The upper pin in the adjustment tool should freely enter the hole in the accelerator cross shaft lever. (On trucks the pin on the lower end of the tool is used). See Fig. 31 and 32.

3. If the pin does not enter the hole in the lever, loosen the accelerator rod

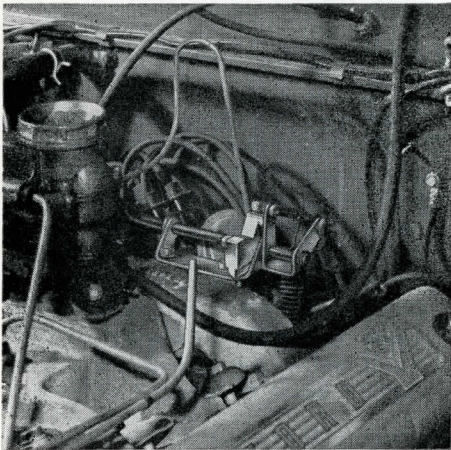


Figure 31

to carburetor-throttle-lever-connecting-link-locknut. Rotate the connecting-link-barrel until the pin freely enters the hole in the lever, with the carburetor throttle closed.

4. Tighten the connecting-link-barrel-lock-nut securely.
5. Continue according to shop manuals.

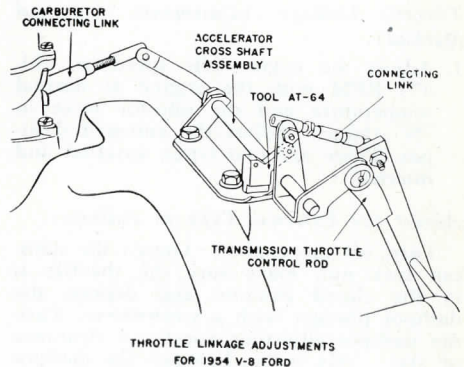


Figure 32

1955 Ford V-8

Throttle linkage adjustments on 1955 Ford cars with V-8 cylinder engines require the use of the Throttle Linkage Pin (AT-61). Linkage adjustments on 1955 Ford 6 cylinder cars can be done without a special tool; consult a shop manual for this.

Throttle linkage adjustment of V-8 models is as follows:

1. Adjust engine idle speed to 445-455 rpm with the engine at normal temperature and selector lever in "N" range. Adjust anti-stall dashpot. Turn ignition off.
2. Disconnect throttle control rod from accelerator shaft and bracket and bracket-assembly.
3. Insert Throttle Linkage Gauge (AT-61) through the three holes in accelerator shaft assembly to lock it in position. Fig. 31.
4. Adjust length of accelerator-to-control-shaft-adjusting-link to obtain accelerator pedal height of 3-11/16" (car), 3-9/16" (8-cylinder Special) or 4-1/4" (Thunderbird).

5. Tighten adjusting lock nuts securely, then remove tool. The holes in accelerator shaft assembly must remain aligned after the tool is removed.
6. Adjust transmission throttle control rod until clevis pin freely enters holes in clevis, then lengthen rod by rotating clevis counter-clockwise 3 turns.

Note: If slippage is encountered lengthen rod but do not exceed 4 turns.

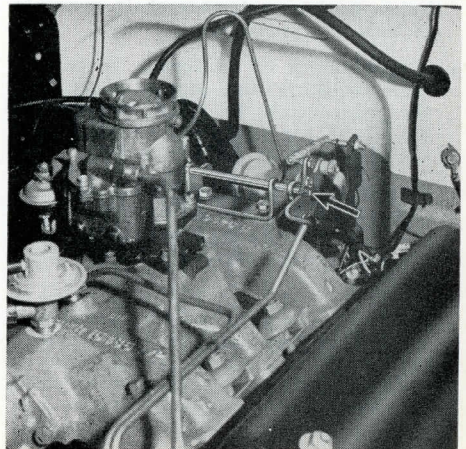


Figure 33

LINKAGE ADJUSTMENTS

1956-57 Ford V-8

Linkage adjustments must first be made using AT-61 and then the final adjustment of the throttle control rod can be made by the Pressure Method (using AT-67MB oil pressure gauge set). The pressure method should also be used after complete overhaul or at pre-delivery.

Throttle Linkage Adjustments: (Manual Method).

1. Adjust the engine idle speed to 450-475 RPM with the engine at normal temperature and the selector lever in "N" range. Adjust the anti-stall dashpot. There are two types; external and internal.

Adjust the External Type as Follows:

Turn off the engine. Loosen the dashpot lock nut, make sure the throttle is in the closed position and depress the dashpot plunger with a screwdriver. Turn the dashpot adjusting nut for a clearance of .045 - .064 inches between the dashpot plunger and the throttle shaft lever. Now tighten the lock nut.

Adjust the Internal Type Dashpot as Follows:

1. Hold the primary throttle plates in the wide open position and check the distance from the top surface of the air horn assembly to the top of the plunger shaft. If this distance is not $7/16"$, bend the lug on the dashpot operating lever.
2. With the engine turned off, disconnect the throttle control rod from the accelerator assembly. Insert throttle linkage gauge (AT-61) through the three holes in the accelerator shaft assembly to lock it in position.
3. Adjust length of accelerator to control shaft adjusting link to obtain accelerator pedal height of $3-5/8"$ for 56 V-8 or $3-1/8"$ for 57 V-8. (Thunderbird $4-1/4"$ for 56 or $4-7/8"$ for 57).
4. Tighten the adjusting lock nuts securely then remove AT-61. The holes in the accelerator shaft assembly should remain aligned after the AT-61 is removed.
5. Adjust transmission throttle control rod until clevis pin freely enters holes in clevis, then lengthen throttle control rod by rotating the clevis three turns counterclockwise. Assemble the throttle control rod to the accelerator assembly lever.

6. Final adjustment of the throttle control rod can now be made by the Pressure Method of linkage adjustment which follows:

Pressure Method of Throttle Linkage Adjustment:

1. Install the AT-67-B on the Fordomatic or Mercomatic Unit. A $1/8"$ pipe plug is located forward of the transmission levers on all units except Thunderbirds, Police Interceptors, and 312 Cubic Inch Station Wagons. On the latter this $1/8"$ pipe plug is located on the rear face of the transmission case. There are several different adaptors which may be used though we feel the AT-67-2 might be the most convenient.
2. With the gauge installed, position it so it can be read from the driver's seat. A tachometer should then be installed on the engine so it too can be read from the driver's position. (Fig. 34) The car should be started and thoroughly warmed up before making any of the checks.

Position the Selector lever in the "DR" drive position.

Increase engine speed to 1000 RPM and note the pressure gauge reading (gauge should indicate 80 to 85 psi). If the pressure reading is below 80 psi, the throttle control rod clevis must be rotated to lengthen the rod. If the pressure reading is more than 85 psi, the throttle control rod clevis must be rotated to shorten the rod.

After the corrections and adjustments have been made, be sure that the lock nut is tightened to secure the adjustment.

3. After the throttle control rod has been adjusted to obtain the desired 80 to 85 psi in "DR" drive range, at 1000 RPM, the pressures at idle and stall speeds should likewise be checked. Acceptable pressure ranges for both idle and stall conditions are shown on page 16.

If idle pressure is above specifications, the throttle lever internal stop must be bent away from the valve body. It is necessary to drain the oil and drop the pan in order to make this adjustment.

If idle pressure is below the specifications or is erratic, trouble is indicated within the transmission and normal diagnosis procedures should be followed.

CAUTION: Do not operate the vehicle for long periods of time under stall or partial stall conditions. Obtain pressure readings quickly and decrease the engine speed to idle.

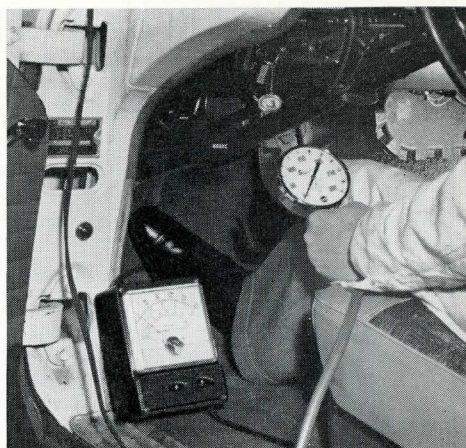


Figure 34

1952-1953 Mercomatic

1. Disconnect clevis pin at point "B", and loosen two bolts at points "E" and "F". Position Linkage Gauge Tool (AT-65) as shown in Fig. 35. Adjust accelerator shaft so it contacts Tool surfaces at point "G", and tighten two bolts points "E" and "F".
2. With engine at normal operating temperature, carburetor at slow idle, adjust accelerator shaft to carburetor or rod, point "A", to enter carburetor throttle arm easily.
3. Holding carburetor at slow idle, pull

upward gently but firmly on rod to transmission throttle lever, thus positioning throttle lever in "stop" position at transmission. Adjust clevis at point "B" so clevis pin enters clevis and lever on control shaft easily. Remove clevis pin and lengthen rod by turning clevis two and one-half full turns counter-clockwise and assemble in place.

If adjustment is unsatisfactory use three turns. But do not exceed three and one-half full turns from the "stop" position.

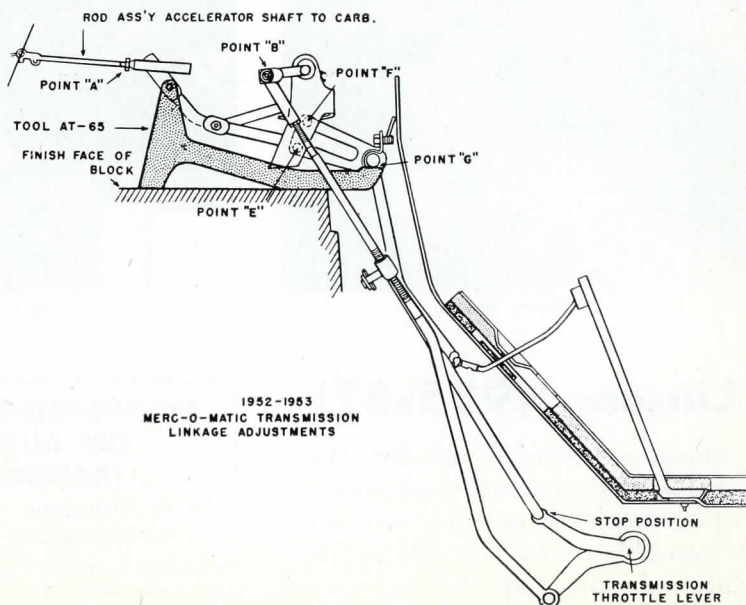


Figure 35

LINKAGE ADJUSTMENTS

1954-57 Mercomatic

1. Adjust idle speed (425-450 rpm in "DR" position) then turn off ignition. Adjust anti-stall dashpot (see shop manual).
2. Disconnect carburetor-to-control-shaft-rod at carburetor.
3. On 1954 and 1955 models remove clevis pin that secures transmission control rod to transmission control shaft. On 1956 models it is not necessary to remove this pin unless adjustments have to be made.
4. On 1954 and 1955 insert gauge pin tool through control rod and shaft bracket, as shown in Fig. 36. On 1956 models insert the pin as shown in Fig. 37.
5. With engine at operating temperature and on slow idle, adjust carburetor-to-control-shaft-rod so that it enters hole in carburetor freely. If rod is too long shorten one full turn and assemble into hole in carburetor. (Remove gauge pin tool (AT-62).

6. While holding carburetor throttle in slow idle position, hold control-shaft-to-transmission-rod up against its stop, and adjust length of rod to allow free entry of clevis pin in hole in shaft of transmission-control-shaft. Lengthen rod by turning clevis 3 complete turns in counter-clockwise direction.

7. Install clevis pin and secure with cotter pin and tighten clevis locknut.

Note: If, after making this adjustment, clutch or band slip is still indicated, the rod may be lengthened another complete turn. However, complete adjustment should not exceed a total of 4 turns from "stop".

Final adjustments can be made using pressure method of linkage adjustments. (Use AT-67-MB). Follow the same procedure used on Fordomatic.

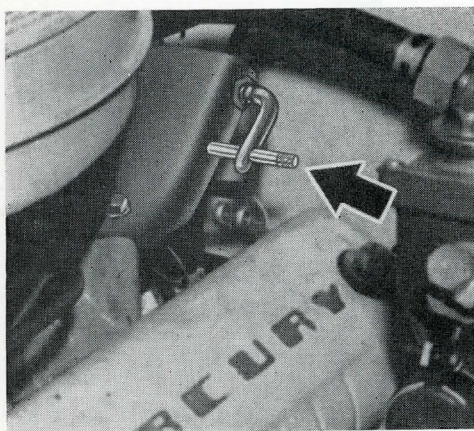


Figure 36

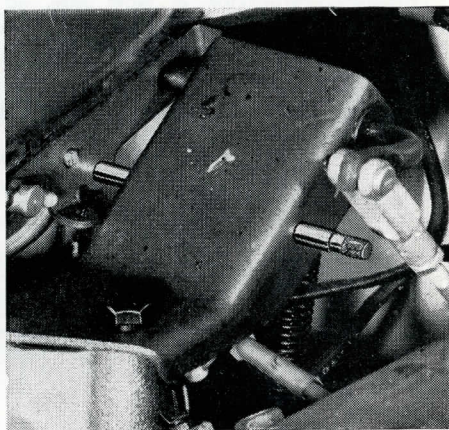


Figure 37

Lincoln (1955-57)

Procedure is same as 1954-1955 Mercury except the carburetor-to-control-shaft-rod is adjustable at both ends, and must be adjusted to fit freely at both the carburetor and shaft ends.

RECOMMENDED READINGS ON AUTOMATIC TRANSMISSIONS

- GA-99 Hydramatic Manual.
- GA-161 Fordomatic Manual.
- GA-162 Controlled Coupling Manual.

LINKAGE ADJUSTMENTS

POWERFLITE 1953-58

The recommended procedure for adjusting powerflite is with the pressure method. Use the AT-67MB Pressure Gauge Set.

1. Apply the parking brake and move the selector lever to "N". With the engine at normal operating temperature, adjust idle to 475-500 r.p.m.'s. and stop the engine. Set up the tachometer under the car.
2. Start the engine and raise the car on the hoist. Set up the 100 PSI throttle pressure gauge from the AT-67-M-B set using suitable fittings on the throttle pressure take-off (1/8" pipe plug) located on the right side of the transmission. With the transmission in neutral, there is no pressure at this plug.
3. Put the transmission in "D" range. This can be done by moving the gear shift control lever at the transmission one detent, or notch, toward the front of the car. Disconnect the throttle control rod from the throttle lever at the transmission and pump the lever several times by hand. Each time the lever is returned to its stop, the pressure should return to 13-15 PSI. If pressure does not fall in this range, adjust as follows:
4. Adjust the throttle valve adjusting screw to correct the error in throttle pressure noted in step 3. This adjusting screw must be reached by removing the 3/8" pipe plug on the left side of the transmission. About

one quart of fluid may drain out when this plug is removed.

5. Use a suitable nut driver such as an ND-6 to adjust the throttle pressure to 13-15 PSI. Turn the screw clockwise to decrease pressure, counterclockwise to increase the pressure. After adjusting, put the pipe plug back on and tighten to 20-25 foot pounds.
6. After the throttle pressure adjustments have been made, make the throttle linkage adjustments as follows:
 - a. For V-8 engines, make the adjustment on the throttle control rod. Be sure carburetor is off fast idle. Loosen the clamp nut on the throttle control rod and pull the rear part of the rod toward the rear of the car to take up all slack. Tighten the clamp nut.
 - b. For six cylinder engines, loosen the vertical clamp rod and adjust the carburetor lever rod to provide 5-7/16" distance between the anchor points of the throttle return spring. With the engine idling (be sure it is not on fast idle) take up all slack at the vertical rod and tighten the clamp nut.
7. After completing adjustment, move selector lever to "N" and remove the pressure gauge. Replace the plug and apply from 10 to 12 foot pounds of torque. Replace the transmission fluid that drained when the 3/8" plug was removed.

TORQUEFLITE 1956-58

No special tools are required for linkage adjustments on Torqueflite transmissions. The simple adjustment below is recommended by the manufacturer in the shop manuals covering Torqueflite.

1. At normal operating temperature adjust idle to 475-500 r.p.m. Turn off the engine and move selector lever to "N".
2. (Four barrel carburetors). Loosen throttle linkage adjusting nut on the rod from bell crank to intermediate throttle control. Move rod rearward against idle stop on transmission throttle cam. Tighten throttle adjusting nut using 7 to 9 foot pounds of torque.

3. (Two barrel carburetors). Follow same procedure as step 2 except since there is no intermediate throttle control assembly, adjustment is made on the bell crank carburetor rod.
4. Adjust the accelerator pedal rod by removing the pedal to the accelerator shaft rod at the pedal arm. Loosen the lock nut and turn the socket end of the rod in the direction required to adjust the pedal so that a wide open throttle is obtained when the pedal is depressed just down to the floor mat but not compressing it.

BAND ADJUSTING TOOLS

	ATC-50A or AT-50 Band Adj. Tool	F-5-L Sliding "T" Bar	TQ-12-B Torqometer	F-310 5/16" Sq. Socket	AT-56 Screwdriver Bit	AT-55 1/4" Hex Bit	AT-60 .250" Gage Block	AT-68 Adapter	MT-415A Tachometer	F-67-B Ratchet Adapter	FX-6 Extension	F5-101 5/16" Hex Socket	AT-52 Front Servo Gage	AT-54 Rear Servo Gage	Thru Floor Access Hole	Requires Removal of Oil Pan	Transmission out of Car Only
Hydra-matic	Front	Int.	x	x									x			x	
	Ext.		x	x					x						x		
	Rear	Int.	x	x										x		x	
	Ext.		x	x					x						x		
Dynaflow	Low		x		x												Late Models
	Reverse		x		x										Early Models		Late Models
Powerglide	Low		x		thru '53 x	late '53-'55 x											x
	Reverse		x		x												x
Fordomatic Mercomatic Turbo-Drive	Front				x		x			x						x	
	Rear			x				x							x		
Flightomatic Flashomatic	Kickdown		x														54 Dodge Plym x
	Reverse								x							x	
Powerflite	Kickdown																
	Reverse																
Torqueflite	Kickdown																
	Reverse																

LINKAGE ADJUSTING TOOLS

TOOL NUMBER	DESCRIPTION	CAD	K & W	HUD.	LIN.	NASH	OLDS	PONT.	BUICK	CHEV.	FORD	MERC.
AT-51A	Throttle Lever Bending Tool	All thru '55	All	All thru '56	All thru '54	All	All Except Jetaway	All thru '54				
AT-53A	Throttle Lever Gage	All thru '55	All	All thru '56	All thru '54	All	All	All thru '54				
AT-57	Throttle Linkage Adjusting Pins (2)					All						
AT-58	Throttle Linkage Adjusting Pins (3)		All		All thru '54		48-49	48-54				
AT-59	Throttle Linkage Adjusting Pin (1)							55-57				
AT-61	Throttle Linkage Adjusting Pin (1)										55-57	
AT-62	Throttle Linkage Adjusting Pin (1)				55-57							54-57
AT-63	Throttle Linkage Adjusting Gage										52-53	
AT-64	Throttle Linkage Adjusting Gage										'54	
AT-65	Throttle Linkage Adjusting Gage											52-53
AT-66A	Throttle Linkage Adjusting Gage									53-57		
AT-69	Throttle Lever Gage			'57		56-57	56-57					
AT-70	Throttle Linkage Adjusting Gage						54-57					

Other *Snap-on* Tools Required for Adjusting and Draining of Automatic Transmissions

TOOL NUMBER	DESCRIPTION	APPLICATION						
		Hydramatic	Powerflite	Fordomatic	Dynaflow	Packard Ultramatic	Nash Ultramatic	Powerglide
MT-415A	Tachometer	x	x					
TQ-50AF	50 Foot Pound Torqometer, 3/8" Drive		x	x	x	x	x	
TQ-51A	600 inch. Pound Torqometer, 1/2" Drive					x	x	
F-4L	Ferret Speeder Wrench	For removing housing bolts on all adjustments requiring oil pan removal. Required also for use with the spinner is a fairly complete set of flexsockets to cover all the various sizes used.						
GA-44	Flywheel Turner							
S-9831	Flywheel Turner				x			
A-120	Drain Plug Wrench	For draining oil pans on adjustments requiring oil pan removal.						
FA-6L	Drain Plug Wrench							x
PP-409	Flywheel Drain Plug Socket				x			
86	Diagonal Pliers	For removal of small cotter pins on throttle linkages.						
OE-815-K	Open-End Wrench Set	For adjustments on all throttle linkages.						
040	Offset Screwdriver				x			
FCO-20 & 24	Crowfeet						x	
F-320	3/8" Drive 5/8" Square Socket					Pre-'55		
SW-301	1/2" Drive 15/16" Hex Socket					Pre-'55		
SW-201	1/2" Drive 5/8" Hex Socket					'55		
SW-424	1/2" Drive 3/4" Square Socket						x	
SW-341	1/2" Drive 1-1/16" Hex Socket						x	
AT-67-MB	Oil Pressure Gage Set	x	x	x	x	x	x	x

***Snap-on* Tools Needed for Major Overhaul Of Automatic Transmissions**

CJ-68	Universal Combination Puller Set	All Transmissions
CJ-66-16A	Chrysler Grease Retainer Puller Head	For older type Hydramatic units
70A or B	Snap Ring Pliers	All Transmissions
325	Feeler Gage Set	For checking bushings and in oil pump. All Transmissions
LS-462	1-7/16" Socket	For removing main shaft nut on Hydramatic
L-528H	T-Handle	For use with LS-462 (Hydramatic)
PC-106	Punch	For driving pins in planet gears. All Transmissions
PC-110	Punch	For driving pins in planet gears. All Transmissions
PC-816	Chisel	For cutting off bronze governor drive gears. All Transmissions
3/8" or 1/2" Drive Sockets		Required in the following sizes: 7/16", 1/2", 9/16", 5/8", 3/4", 1", 1-1/4". All Transmissions
Several sizes of 3/8" or 1/2" Drive Ratchet Extensions also Required. All Transmissions.		
CG-270	Medium Gear Puller	With CG-250 legs, 66-1 long screw and 66-2 booster hammer for removing Dynaflo oil seals
A-57L-B	Bushing Remover and Insert Set	Of this set the A-57B2 screw, A-57-3 washer and A-57-21 nut are used for replacement of universal joints on Dynaflo's
A-1497H	Hydramatic Transmission Seal Drivers	(4 Drivers - 1 Handle)

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